IN THE CLAIMS

1. (previously presented) An apparatus for transmitting a digital optical data signal in a seismic data acquisition system, the apparatus comprising:

a) a transducer that modulates an optical carrier to produce the digital optical data signal corresponding to a signal indicative of a sensed environmental condition; and

b) an optical interrogator in optical communication with the transducer for retrieving the digital optical data signal.

2. (original) The apparatus of claim 1 further comprising an optical source for providing the optical carrier to the transducer.

3. (original) The apparatus of claim 1, wherein the transducer receives a digital electrical signal input.

4. (original) The apparatus of claim 1, wherein the transducer modulates a property of the optical carrier.

5. (currently amended) The apparatus of claim 4, wherein the digital optical data signal ~~signals~~ includes symbol data indicative of the modulated property ~~properties~~ of the modulated optical carrier.

6. (original) The apparatus of claim 4, wherein the modulated property includes one or more of amplitude and polarization.

7. (original) The apparatus of claim 1, wherein the transducer includes a mirror for reflecting at least a portion of the optical carrier.

8. (original) The apparatus of claim 7, wherein the mirror comprises a micromachined mirror.

9. (original) The apparatus of claim 4, wherein the transducer further comprises a plurality of transducers.

10. (previously presented) The apparatus of claim 9, wherein the plurality of the transducers comprises one or more of a Bragg grating and a liquid crystal device.

11. (previously presented) The apparatus of claim 1, wherein the transducer receives the signal indicative of a sensed environmental condition from one or more sensors.

12. (previously presented) The apparatus of claim 1 further comprising a power source charging circuit that receives optical power from a telemetry cable and converts the optical power to electrical power.

13. (original) The apparatus of claim 11, wherein the one or more sensors operate in a low power state.

14. (previously presented) The apparatus of claim 11, wherein the one or more sensors comprise one or more of i) an accelerometer; ii) a velocity sensor; iii) a hydrophone; iv) an electromagnetic sensor; v) a velocimeter; vi) a temperature sensor; vii) a heading sensor; viii) a flow sensor; and ix) an inertial sensor.

15. (previously presented) The apparatus of claim 3, wherein the transducer further comprises an interface circuit including a digital electrical-to-digital optical data signal transducer.

16. (previously presented) A method of transmitting a digital optical data signal in a seismic data acquisition system, the method comprising:

a) modulating an optical carrier to produce the digital optical data signal corresponding to a signal indicative of a sensed environmental condition using a transducer; and

b) retrieving the digital optical data signals from the optical carrier using an optical interrogator.

17. (original) The method of claim 16 further comprising providing the optical carrier to the transducer using an optical source.

18. (original) The method of claim 16 further comprising providing a digital electrical signal input to the transducer.

19. (previously presented) The method of claim 16, wherein modulating the optical carrier comprises modulating a property of the optical carrier.

20. (previously presented) The method of claim 19, wherein the digital optical data signal includes symbol data indicative of the modulated property.

21. (currently amended) The method of claim 19, wherein the modulated property includes one or [[of]] more of amplitude and polarization.

22. (previously presented) The method of claim 16, wherein modulating the optical carrier comprises reflecting the optical carrier using a mirror.

23. (original) The method of claim 22, wherein the mirror comprises a micro-machined mirror.

24. (previously presented) The method of claim 16, wherein using the transducer further comprises using a plurality of transducers.

25. (previously presented) The method of claim 24, wherein the plurality of the transducers includes one or more of a Bragg grating and a liquid crystal device.

26. (currently amended) The method of claim 16, wherein the transducer receives the signal corresponding to ~~indicative of~~ a sensed environmental condition from one or more sensors.

27. (previously presented) The method of claim 16 further comprising receiving optical power from a telemetry cable at a power source charging circuit and converting the received optical power to electrical power.

28. (previously presented) The method of claim 26, wherein the one or more sensors operate in a low power state.

29. (previously presented) The method of claim 26, wherein the one or more sensors comprise one or more of i) an accelerometer; ii) a velocity sensor; iii) a hydrophone; iv) an electromagnetic sensor; v) a velocimeter; vi) a temperature sensor; vii) a heading sensor; viii) a flow sensor; and ix) an inertial sensor.

30. (previously presented) The method of claim 18 further comprising providing an interface circuit including a digital electrical-to-digital optical data signal transducer.

31. (previously presented) An apparatus for acquiring digital seismic information, the apparatus comprising:

a) a sensor for sensing an environmental condition, the sensor providing a first signal indicative of the sensed environmental condition;

b) a transducer coupled to the sensor for receiving the first signal and converting the first signal to a digital optical data signal indicative of the sensed environmental condition; and

c) an optical fiber coupled to the transducer.

32. (previously presented) The apparatus of claim 31, wherein the transducer converts the first signal by modulating an optical carrier.

33. (previously presented) The apparatus of claim 32, wherein the transducer includes a controllable reflector operable to modulate an optical carrier.

34. (previously presented) The apparatus of claim 32, wherein the transducer includes a micro-machined reflector operable to modulate an optical carrier.

35. (previously presented) The apparatus of claim 32, wherein the transducer includes an electromechanical actuator acting on the optical fiber to modulate an optical carrier in the optical fiber.

36. (previously presented) The apparatus of claim 31, wherein the transducer includes a controllable light source, the transducer activating and deactivating the controllable light source in response to the first signal to convert the first signal.

37. (original) The apparatus of claim 31, wherein the sensor further includes an analog-to-digital converter, the first signal being a digital electrical signal.

38. (previously presented) A system for acquiring digital seismic information, the system comprising:

a) a sensor for sensing an environmental condition and providing a first signal indicative of the sensed environmental condition;

b) a transducer coupled to the sensor for receiving the first signal and converting the first signal to a digital optical data signal indicative of the sensed environmental condition;

c) an optical fiber coupled to the transducer; and

d) a recorder recording information based at least in part on the digital optical data signal, the recorded information being indicative of the sensed environmental condition.

39. (previously presented) The system of claim 38 further comprising a light source providing an optical carrier, the transducer operating on the optical carrier to convert the first signal to the digital optical data signal.

40. (previously presented) A method of acquiring digital seismic information relating to an environmental condition, the method comprising:

a) sensing the environmental condition with a sensor;

b) generating a first signal indicative of the sensed environmental condition;

c) converting the first signal to a digital optical data signal relating to the digital information; and

d) transmitting the digital optical data signal in an optical fiber.

41. (previously presented) The method of claim 40, wherein converting the first signal comprises activating and deactivating a light source.

42. (previously presented) The method of claim 40, wherein converting the first signal comprises acting on an optical carrier to generate the digital optical data signal.